THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER

A MAGAZINE OF POPULAR SCIENCE FOR THE LECTURE-ROOM AND THE DOMESTIC CIRCLE.

EDITED BY J. HAY TAYLOR.

WITH WHICH IS INCORPORATED THE "LANTERN WORLD."

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NOTICES.

THE *Optical Magic Lantern Journdl and Photographic Enlarger* is issued on the 1st of every month, price Two Pence, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

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NOTES.

Wedding Bells.—We feel assured that our readers will join with us in congratulating Mr. Edmund A. Robins on the occasion of his marriage on the 10th ult. to Miss Elsie Olney, and in tendering the couple every good wish. On several occasions Mr. Robins, who holds an important position with the Eastman Photographic Materials Company, at their Harrow Factory, has contributed excellent articles to the columns of this Journal.

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Mr. Edmund H. Wilkie.—We are pleased to learn that Mr. Wilkie, who was at one time one of the leading lights of the lecture platform at the late Royal Polytechnic in its palmy days of lantern entertainments, has recovered from his long illness, and is once more occupying his energies in connection with the commercial side of lanterndom. He is making a special feature of high-class mechanical and other slides and effects for the lantern. Not only is he a high-class artist (assisted by an experienced staff), but also skilled in the various mechanical methods of making effect slides, which give most startling effects on the screen. In some of these slides mechanical appliances of intricate workmanship are employed. Several particulars of these he is kindly giving details of in his articles entitled "Optical and Mechanical Effects for the Lantern" in this Journal for those who are capable of making same, but, we may add, these slides may be obtained from Mr. Wilkie himself. His address is 114, Maygrove Road, West Hampstead, one minute's walk from Brondesbury railway station. In his catalogue details of some beautiful dioramic effects are to be found. Those interested in this delightful phase of the lantern will do well to send for this catalogue.

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Royal Photographic Society's Exhibition.—On the 24th ult., this annual exhibition was opened with a soiree to which most of the prominent people in the photographic world were invited by the Council. A large number were present and an enjoyable evening spent. This exhibition, which is held at 5a, Pall Mall East, S.W., will remain open till November 12th. Those who visit it will thoroughly enjoy the pictures.

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The Heaviest Metal.—The heaviest thing in the world is the metal osmium, the blush-white metal with violet lustre, which (the popular *Science News* explains) Mr. Smithson Tennant discovered 90 years ago in the residue from dissolved platinum ores. This metal has a specific gravity of 22·477, that of gold being 19·265, lead 11·367, iron 7·79, and lithium, the lightest, only 0·594. The French chemist, Joly, determined that osmium is likewise the most infusible of metals. It could never be made to yield to the oxyhydrogen flame, which makes platinum and iridium run like water. But Joly had been subjecting osmium to the excessively high temperature of the electric arc, which Moissan has of late employed successively in the manufacture of diamonds. Under this fierce heat the rare metal ruthenium, which used to be deemed all but infusible, readily melts, but osmium remains refractory, there being apparent only the faintest traces of fusion. On this account osmium cannot be prepared in sufficient quantity to make it very useful in the arts. But its alloy with iridium, which defies the acids, is of some value, nothing better having been found wherewith to tip gold pens. Being non-magnetic, its employment for the bearings of the mariner's compass has been advocated.

Spectacle Makers' Exhibition.—From the 3rd inst. an exhibition of optical, scientific, and mathematical instruments will be held for a week at the Mansion House, London, under the auspices of the Spectacle Makers' Company.

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£200 Prize Competition.—Some time ago the Thornton-Pickard Manufacturing Company, Limited, announced that they intended giving away £200 in prizes for photographs taken with their apparatus. 200 prints have been sent in and as there was a slight difficulty in determining the comparative merits of several pictures, the number of prizes has in consequence been increased. The following are the winners:—Class I.—First prize, Pierre Dubreuil; second prize, A. A. Bellingham; third prize, F. Spalding; four prizes of £5 each, O. Kurkdjian, Viscount de Valle Paraiso, W. Kirk & Sons, H. G. Kennard; highly commended, J. C. Burrows, W. D. Welford, W. H. Whittard, W. N. Dow, J. S. Brown. Class II.—First prize, A. Lindsay Miller; second prize, E. G. Boon; third prize, W. J. Warren; fourth prize, C. F. Inston; eleven prizes £3 each, R. W. Robinson, H. Owen, F. H. Vine, C. M. Wane, A. W. Andree, J. E. Hunt, A. E. Banfield, C. Metcalfe, J. Patrick, Henri Breux, Louis Meldon; twenty prizes of £1 each, J. Warburg, H. C. Leat, Mrs. Jeannie Welford, J. N. Taylor, H. E. Brightman, H. E. Harris, G. H. Lillie, H. Allison, W. E. Inston, W. D. Hussey, W. P. Thompson, E. Hopkins, A. H. Duncan, J. Smith, W. S. Poole, G. J. Shepherd, J. C. Oliver, W. G. E. Robinson, T. C. Sole, H. S. Parsons, W. Barry.

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A New Cycle Lamp.—Lanternists, who are also cyclists, will be interested to know that Mr. R. J. Moss, the manager of the Abingdon Acetylene Illuminating Company, Limited, of Birmingham, has for some time past been engaged in perfecting a small, neat and compact lamp. It is expected to make its appearance in a week or so.

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The Rilford Oxygen Generator.—We learn that a new oxygen generating apparatus is about to be placed on the market by Messrs. Riley Bros., of Bradford, and that it will generate oxygen in five minutes and will work for any length of time, provided it is properly fed with oxygen charges. It is also said to be automatic in action. We hope to be able to express an opinion as to its working, as soon as the apparatus is ready and certain patent formalities are completed.

Rotherham Photographic Society.—At the monthly meeting, held on the 6th ult., there was a brief chat on "Optical Lanterns," introduced by the chairman, Mr. J. Leadbeater, who showed ordinary single and bi-unial patterns; also lanterns for vertical projection and photo-micrography. A number of very choice (old) hand-drawn and painted slides were handed round, and a promise was given that later in the season they should be exhibited on the screen.

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New Cinematograph Films, etc.—Messrs. West and Son have just introduced some 18 new film pictures consisting of field gun drill, torpedo explosions, attacks and defence by sailors, H.M.S. "Crescent," and many other naval subjects of interest, including about six of yacht racing scenes. These pictures were lately exhibited at Portland Hall, Southsea. The house was crowded, and the audience were delighted. The sole London agents for these subjects are Messrs. Watson and Sons, who have also obtained the sole copyright of a series of 50 pictures for their publication as "Lantern Slides of Captive Wild Animals," taken by Mr. Gambier Bolton. The Warwick Trading Company lately made arrangements to photograph the ceremonies at Amsterdam in connection with the coronation and other fêtes, and within 24 hours were able to publicly exhibit these cinematographic pictures in London. The length of film used was 1,400 feet. Messrs. Fuerst Bros. are now in a position to supply the following films, either Lumiere or Edison gauge: Macdonald's Egyptian Brigade and the Charge of the 21st Hussars (now the 21st Lancers).

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The Ashton-under-Lyne Photographic Society.—In order to induce members to make better use of the society's rooms, the committee have placed in the reading-room the following papers in addition to the photographic journals already provided, viz.:—*The Illustrated London News*, *The Graphic*, *Studio*, *Sketch*, *Manchester Guardian* and *City News*, *Ashton Reporter* and *Herald*.

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Kromscop Factories.—Mr. Fred. E. Ives sailed on the 28th ult. for the United States, in order to take steps for the establishment of factories for the manufacture of his Kromscopic apparatus.

A Serious Oxy-Acetylene Explosion and Its Cause.

AMONG the questions received during the past few days, we have one from a reader in foreign parts, asking for the cause of a serious explosion he lately had at his studio. As the subject is one of public interest, especially to those who, far away from all opportunity of receiving cylinders of compressed oxygen, make their own gas and use it from a tank on the gasometer principle, it is to be hoped that some who may be placed in a similar position may profit by the experience of others—we will give full details.

In one corner of the studio in question, stood a small gas tank of about 5 feet capacity into which oxygen gas had from time to time been conducted, so as to be, as it were, on tap for certain lantern exhibitions, this during the five years which it had been in use having been found a convenient method of

storing the gas

(cylinders of compressed gas not being obtainable in that part of the world).

The subject of acetylene gas being extensively dealt with in the MAGIC LANTERN JOURNAL, it was to be expected that our friend would try it as an illuminant, so he sent to one of our advertisers for a small acetylene generator, and in due course this reached its destination. A supply of acetylene was generated and about 2 feet stored in the tank spoken of, which had for some considerable time previous been standing empty.

An opportunity for using the acetylene, excepting a short trial, did not present itself for about five days, but so far everything was right and the gas was used up. The day following it became necessary to use the oxyhydrogen light for some experiments, and for the storing of the oxygen the aforesaid tank had again to be brought into requisition, but before charging it, the interior of the gasometer was filled with water, the top of the bell portion being covered with same in order to "remove" all acetylene gas.

About 3 feet of oxygen gas were then passed into the gasometer. The lantern with its ether saturator was erected and a light applied at the hydrogen side of jet; the flame given by this was, we are informed, not nearly so large as had been usually obtained, but this the user attributed to the intense cold which prevailed, the thermometer standing at the time at 38 degrees. Suddenly one of the rubber tubes blew off with a loud report and the conclusion arrived at was, that owing to the intense cold the oxygen was not taking up sufficient vapour from the ether. Nothing more was done that evening and matters were postponed until the following evening, when, with the hopes of making the oxygen take up more ether vapour, the saturator was slightly warmed before being placed in the lantern. A light was then applied at the hydrogen side of jet but the flame was by no means good and gave a jerky appearance and emitted a hissing sound. Thinking to improve matters, a slight tap was given to the jet, and the dissolver was manipulated a few times but without any improvement.

The gas had by this time been burning for about two minutes and the screw tap on direct oxygen side was opened, when instantly a tremendous explosion took place which blew the gas tank to pieces, tore off several boards of which the walls were constructed, broke the skylight windows, and a piece of iron weighing 50 lbs. was hurled about 10 or 12 feet. The sound of the explosion was heard at a distance of four miles.

We are very pleased to say that no lives were lost, although our correspondent must congratulate himself on his **miraculous escape;** judging from the position of the apparatus. Had the tank been on the other side of the lanternist he would assuredly have been seriously injured if not instantly killed.

The foregoing are the facts of the case; now we will consider the cause of the explosion. It appears that acetylene gas was standing in the gasometer for five days; now during this period a considerable quantity of the acetylene would have been dissolved by the water. The water, when changing from acetylene to oxygen, was *not* run off and a fresh supply poured in to take its place. The only means of making sure that all the gas was expelled being to sink the bell chamber under the surface, thus ensuring that the water completely filled the space inside.

Now, we learn that the gasometer is charged with a few feet of oxygen, but on passing this gas through the ether saturator the flame given was not so good as usual, so matters are allowed to stand for 24 hours. In the meantime the water was slowly giving out some of the acetylene gas with which it was impregnated.

On the first evening, sufficient acetylene had evidently not been given off by the water to form an explosive mixture which would fire back, although it was sufficiently strong to blow off the rubber tubing. On the second evening a most explosive mixture was present in the tank, but the warming of the saturator and free giving off of the ether vapour put the mixture (from that side of the jet) just outside of the firing back point, but as soon as the free oxygen side was opened we have an uninterrupted channel of highly explosive gas from the jet to the tank, which only required the application of a flame to bring about a most disastrous result. This flame was present at the hydrogen side of the jet, and the only extraordinary thing under such circumstances would have been had it not fired back.

Our correspondent also asks two definite questions pertaining to this explosion, viz.:—A, Did the lighting gas at jet cause a flame to fire back through jet to dissolver, then through 8 feet of tubing to tank? I can, he says, hardly think this was the case as no flame was seen. B, Would the turning on of jet and dissolver so disturb the explosive gas in the gasometer as to cause the explosion by concussion? To which we answer A, The light at the hydrogen side caused the ignition of the explosive mixture contained in the tube conveying what should have been pure oxygen, and this passed with lightning rapidity as suggested to the tank. B, We would not think of attributing the cause of the explosion to such slight concussion as that to which you allude.

Optical and Mechanical Effects for the Lantern.—No. II.

By EDMUND H. WILKIE.

(Late Royal Polytechnic Institution).

THE simplest form of mechanical effect is undoubtedly that in which the whole change is brought about on one slide, such as the slipping slides so dear to our youthful days. Who does not remember the old lady of benign and venerable aspect, and decorated with a gaily striped shawl and mob cap, whose nose, originally of the shape commonly known as a "pug," gradually became elongated until it resembled a carrot?

Everyone who is interested in slides is aware that the nose is in the first place painted its full length on the fixed glass, and a slip passing in front bears a patch of opaque black, which reduces the feature to the dimensions of its first appearance on the screen, and the slip being slowly withdrawn it is allowed to exhibit its full length.

In business it is only necessary for a want to become known and the necessary articles are forthcoming to meet it, and as many private persons use single lanterns, effects have been recently introduced to meet their requirements.

Their scope is of course very limited, but some of them have a really good effect upon the screen, and deserve a little attention.

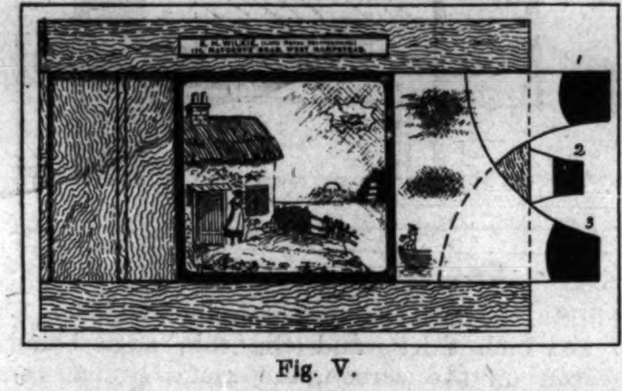


Fig. V.

One of this class of effects is illustrated at Fig. V, the subject being "The Sailor's Return." It will be seen from the drawing that it consists of a picture with three moveable slipping glasses, and represents a cottage by the sea shore with the sailor's wife looking anxiously out to sea, her thoughts being fixed upon her absent husband.

On the view itself, which is painted to represent moonlight, the clouds have gathered in heavy banks towards the right of the picture, and amidst these clouds the artist has represented a little scene showing a ship tossing in a stormy sea amidst the flashing of lightning, and down on the horizon just below this is a square rigged ship in full sail.

When placing the slide in the lantern, two of the slips, numbered 1 and 2, are pushed right in, and as each slip has a portion of dense cloud painted on its inner surface, the scene of the storm and the ship in full sail are obliterated, and do not appear on the screen. Slip 3 is pulled out, and upon this is painted a sailor in a boat, but owing to the slip being withdrawn he is at present off the side. We now commence to exhibit the effect and observe the sailor's wife gazing anxiously seaward, when gradually the vision of her husband's ship in a dreadful storm presents itself to her mind's eye. This fades away, and in the distance, on the horizon, something is seen growing into form, which presently takes the shape of a large vessel in full sail. Then her grief is changed to joy as she recognises her husband's ship, and presently to complete our tale slip 3 is pushed in, bringing on the sailor in the boat with one foot on the bows ready to jump out, and holding a small round bundle in his hand, which presumably contains money, or a present for his wife; but taking into consideration his heartless conduct in remaining hidden round the corner while his partner was suffering such distress of mind, perhaps it only holds smuggled tobacco for his own personal use.

This is a really nice little effect when exhibited to appropriate music, or shown to illustrate a song, and being neatly executed on a photograph from a drawing, bears magnifying to a considerable extent.

Some of these effects for single lanterns are exceedingly ingenious with regard to the mechanical portion of the slide, and "The Tower Bridge," is a fairly representative specimen of this class. The whole of the moveable portions will be seen on reference to Fig. VI., which is drawn in exact proportion to the real slide.

The slide consists of a mahogany panorama frame about 11 by 4½ inches, in the centre of which is fixed a natural photograph of "The Tower Bridge" specially taken from a particular point of view in order to allow the effect to be built up. Along one side passes a glass upon which are painted cabs and omnibuses, which travel across the bridge when the glass is passed along by means of the winch handle in the corner, and at one end, which will be seen projecting beyond the frame, the glass is tinted with a graduated blue colour to give the appearance of approaching night to the view as it covers it. The moon is etched out of the blue, and a large reflection of light on the water is also taken out as shown in our sketch.

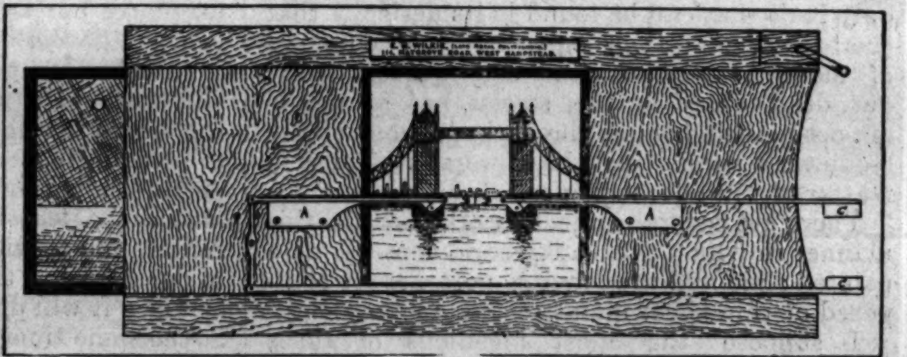


Fig. VI.

There is also a sailing ship being towed by a little steam tug which passes through the bridge when the bascules are raised, and the manner in which the latter operation is effected is ingenious and effective.

The machinery for working this gigantic drawbridge will be seen on reference to Fig. VI. It may perhaps be necessary here to point out that all the mechanical motions are composed of thin sheet brass fastened together with rivets and screwed to the mahogany frame. Two metal supports A A are screwed on to the frame at the sides of the picture, and passing behind the roadway of the bridge, extend to the piers supporting the two large towers. On the picture itself the bridge has no bascules, so these are cut out of sheet metal and rivetted to the supports in the manner and at the angle shown in our drawing.

When placing this slide in the lantern, the panoramic glass is first pushed out to its full extent and the brass bascules are closed, but upon turning the winch handle the glass passes along, causing hansom cabs and omnibuses to travel across the bridge, after which we see a ship approaching, being drawn along by a little steam tug. At this point the bascules are slowly raised just in time to allow the vessel to pass, and if we close them immediately afterwards, it is so arranged that more vehicles pass along in procession, some of them being lighted up as the night effect comes over the view. This ingenious slide is very effective, and the only fault that can be found in its design is that the bascules and their supports being composed of metal are opaque, and consequently come out dead black in the screen, but as this is almost hidden behind the dark portions of the stonework supporting the towers, it is not a matter of vital consequence.

There are several subjects worked out in this manner in which the background consists of a painted slide and the moving portions are composed of thin sheet metal.

I suppose the most ingenious of these recently invented mechanical slides for exhibition in a single lantern is "Blondin crossing the Falls of Niagara," in which a mechanical figure is seen to walk across a black line on the screen, wheeling a barrow in front of him, while his legs advance one before the other in a most natural manner.

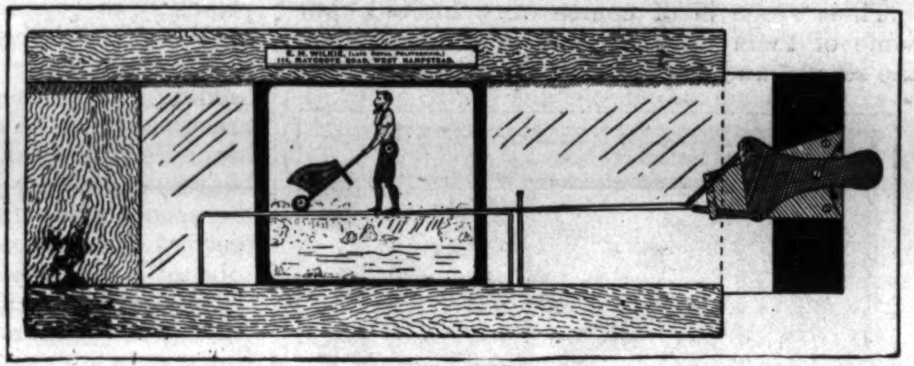

E. H. WILKIE, (Late Royal Polytechnic,)
114, MAYGROVE ROAD, WEST HAMPSTEAD.

Fig. VII.

The frame of this slide measures 10 inches by 4½ inches, and in the centre is placed a natural photograph representing the Falls of Niagara as seen from a distance.

Just below the centre of the view is a bridge of brass, the metal being ¼ of an inch wide by $\frac{1}{32}$ of an inch thick, and the thin edge being focused on the screen, the metal bridge resembles a black line drawn across the picture from side to side. It is on the top of this line that the figure walks wheeling his barrow before him, the ends of this bridge being turned down as shown in our diagram, and securely fastened to the bottom of the frame.

The figure of Blondin consists of three parts, the head and body together with the hips being painted on a long panoramic glass which moves through the frame, and the two legs which are composed of sheet brass are rivetted on to the glass by means of the loosely fitting rivet seen on the hip joint in our drawing.

At the bottom of each foot, which rests lightly on the bridge, is a small portion of brass turned over in the shape of a hook which lightly clamping the bridge, keeps the foot in its place, but is sufficiently loose to allow the figure to go through the motion of walking.

Attached to each heel is a long, thin, but stiff brass wire which passes along the edge of the bridge to the handle at the end of the glass to which it is fastened by two connecting pieces sliding in guides. The handle which moves the feet is pivoted by a screw near its centre, and it will be seen at once on referring to our drawing that if this handle is moved up or down it will draw back one of the wires and at the same time push forward the other. This motion is communicated to the feet, and if the sliding glass is at the same time advanced the length of one of Blondin's steps, a very natural and life-like effect can be obtained.

The wheelbarrow is painted on the glass, but the wheel is of metal with a corrugated edge, and is allowed to revolve on a rivet passing through its centre into the glass plate, and as the top of the bridge is slightly roughened, and the wheel presses upon it, its revolution is noticeable as the figure walks along the rope.

The whole thing is ingenious and out of the common, and while the painting of mechanical slides at times leaves something to be desired, yet the effects are so striking that they form a welcome addition, even to the more ambitious dissolving view exhibitions.

* * *

An Oxy-Hydro-Electric Lantern and Cinematograph.

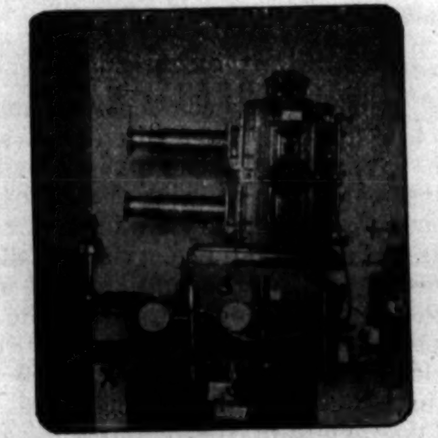
By ALFRED MEAGER.

NOW that the arc light is coming more into use for lantern work I thought that the following might be of some little interest to a number of the readers of the MAGIC LANTERN JOURNAL. It will be noted from the photograph that the lantern itself is in position on a tilting-frame, and as seen may be used in conjunction with compressed gases or the arc light at a moment's notice in accordance with the embodiment of my ideas and wishes, skilfully carried out by Messrs. J. H. Steward:—

Firstly, as an electric bi-unial: The complete back, with its supply tubes, also mixed jets, can be instantly detached, the two arc lamps taking the place of the jets, and two inner flap-doors closing on same, thus forming a second back. Depending from the tilting-frame is the switchboard (end only seen), also instantly fixed or detached, fitted with main terminals, etc., double pole 'cut out' (fuse), ammeter and bell, all most carefully insulated. The back of board is covered with asbestos millboard. The two resistances (variable) are partly seen in position on extending support T (also asbestos covered), with lamps on top. Only one of the resistances is required when using a single lantern.

By the foregoing arrangements it is obvious that only very short and definite lengths of wire are requisite, everything being to hand and within reach whilst manipulating slides, etc., so that the light can, if desired, be increased or otherwise for any particular slide, diagram, or effect.

Secondly, for compressed gases: The arc lamps are removed, and the back, with its supply pipes and jets as before stated, slipped into place, instantly clamped, and, well, there you are! In some places it might be advisable to have both forms of illumination in readiness (as seen), otherwise, if the arc light is to be employed, the lantern itself is simplified by leaving the back, etc., at home, as already indicated. The cylinders stand on two concave iron "shoes" attached to the case, and the latter being on small iron wheels may be easily moved to any desired position in body of a hall. The cylinders are fixed at end of case when using gases, as the resistances, etc., would not be required. The case, further, I have made divisible (marked x), the upper part carrying lenses, etc., and fitted with extending hinged shelves for slides and such-like. The flat shelf s is shown folded up against the tilting frame; this shelf I utilise for slide-box to rest upon.



Thirdly, as a cinematograph: My cinematograph apparatus slides into front base of lantern, the lower lens tubes being of course previously removed, and the upper portion may be used for showing various views, statuary, etc., whilst changing films.

In conclusion, I may say that the whole arranegment, in either form, may be fitted up within five minutes. My lantern (as seen) is the "Docwra" bi-unial by W. C. Hughes.

* * *

PHILIPP WOLFF'S CINEMATOGRAPHIC FILMS.—The variety in the stock of films of this firm is now a very extensive one, and it is being added to daily. Some of the latest of a sensational character include the Corsican Brothers, Photographing the ghost, Cinderella, Faust and Gretchen, and will doubtless have a large sale.

Some of the Properties of Acetylene Gas.

FOR the sake of the brilliant white light given by this gas we are willing to overlook many dangers and inconveniences, and yet this is no reason why such disadvantages should not be reduced to a minimum. The makers of carbide have endeavoured to make a pure carbide, and have succeeded quite well in keeping the sulphur and phosphorus down to a perfectly satisfactory percentage. Makers of generators have tried to turn out an apparatus that will not leak or explode on its own account, and they have succeeded reasonably well. The users of carbide and generators have gone ahead as best they knew how, and have been gaining

abundant experience,

some of which has been costly, and from which the makers have profited, so that the last year has seen many changes in generator design. Following the history of all new things, the difficulty in introducing this light has been great, and acetylene was, and is now, considered dangerous until proved innocent —just the reverse of legal custom. The trouble does not lie with the gas entirely; the first companies organised did not conduct their affairs in a business-like manner, and all the original companies in this country have failed. In the same way imperfect generators were put upon the market and were thrown back on the hands of the manufacturers, the latter in turn being thrown out of the business. It cannot be said that the present forms are perfect either in design or operation, but they certainly are more practicable than the earlier forms.

Upon this subject any new information is always interesting, and it was with considerable pleasure that we received a paper read at Paris by the French engineer Bouvier, in which he discusses some acetylene accidents and incidentally gives considerable data. To those of our readers who are interested in acetylene this will no doubt be instructive, so that we have translated parts of it in the following abstract. He first touches briefly upon the properties of carbide and acetylene.

One pound of carbide of calcium, CaC_2, gives off, under the action of 0·56 pound of water, 5·45 cubic feet of acetylene, C_2H_2, at freezing point and sea-level pressure. Good commercial carbides produce, in France, from 4·5 to 4·8 cubic feet of acetylene per pound of carbide, and the gas contains less than 2 per cent. of impurities. The specific gravity of carbide is 2·22. The gas is 0·91 of the weight of an equal volume of air, one pound occupies a space of 13·75 cubic feet, or one cubic foot weighs 0·0727 pound; it is the richest of the gaseous carbides, containing about 92·3 per cent. of carbon and 7·7 per cent. of hydrogen. Its lighting power is equal to fourteen or fifteen times that of gas in French towns, where a 5 foot burner gives but about 16 candles of illumination; its calorific power is 397 calories per cubic foot, or more than double that of French coal gas. The best luminous effects are attained in burners using a gas pressure of 1·18 to 1·57 inches of water. Three inches are preferred in America.

According to recent tests made by Weber, in Switzerland, a Bray 0000 burner when new gave 43·3 candles, with a consumption of 0·95 cubic foot per hour with a pressure of 1·26 inches but it choked up after twenty hours in service. The same author states that Dr. Billwiller's burner, having two jets striking each other at 90° and drawing along air by a special arrangement, was burned many times by reason of the great excess of air, and with a pressure of 1·9 inches of water gave 29·7 candles while consuming 0·78 cubic foot of gas per hour. Atmospheric burners give best results.

Acetylene ignites at 896° Fahr. and is decomposed at 1,436° Fahr. Its flame is a succession of explosions taking place so rapidly among the molecules as to

appear continuous.

Calculation gives a flame temperature of over 4,500° Fahr. (4,388° Bunte). Actually it is not as hot as the Bunsen flame of a Welsbach burner, being but about 1,652° Fahr. as against that of the latter of 2,550° Fahr. Complete combustion requires five volumes of oxygen for every two volumes of acetylene.

At Monnaie, in Germany, during the summer of 1897, an acetylene Bunsen burner was tested whereby a temperature was rapidly obtained of over 2,700° Fahr., enabling them to melt a quantity of nickel in thirty minutes which previously required eighty to eighty-five minutes.

The flame is white, of magnificent brilliance, comparable spectroscopically to sunlight, and very well adapted to the comparison of colours and for photographic use, as it is strongly actinic. An acetylene burner produced but half the quantity of CO_2 resulting by burning a Welsbach lamp and but one-fourth of that of a petroleum lamp.

The mixture of acetylene with air is explosive between wide limits: From 5 to 65 per cent. of gas according to Le Chatelier; from 3 to 72 per cent. according to Bunte, also up to 80 per cent.; compare this with the range of 8 to 30 per cent. with city gas. According to Gréhant a mixture of one volume of acetylene with nine volumes of air is the mixture giving a maximum explosion.

While acetylene alone at atmospheric pressure decomposes at 1,380° Fahr., a mixture containing 35 per cent of air, or 65 per cent. of acetylene at a most, decomposes at 896° Fahr. according to Le Chatelier. The velocity with which the ignition travels is very great.

The energy of acetylene is increased by compression (probably due to an increase of latent heat?) which

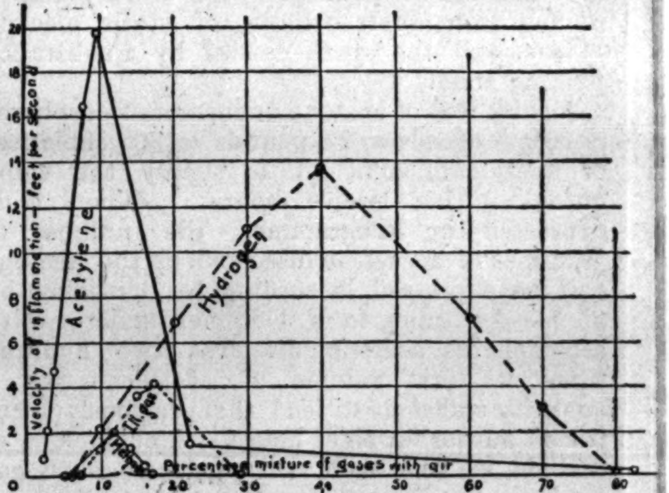
Increases the velocity

of propagation of combustion and lowers the ignition temperature. Berthelot observed that compressed acetylene was explosive in a tube 0·78 inch diameter and 13 feet long. "At over two atmospheres," he says "acetylene manifests the ordinary properties of explosives." In some experiments made by the Pintsch Gas Company, of Berlin, a reservoir containing acetylene under six atmospheres pressure was connected to an iron tube 0·19 inch diameter and 7·8 feet long; at about 5 feet from the receiver the pipe was heated by burning gas and the receiver exploded.

After describing twenty-eight accidents, with not sufficient detail, however, to be interesting, except that they occurred within the past two years and resulted in nineteen deaths, the author proceeds to discuss the reason why acetylene is dangerous, citing a case reported by Pictet and described by Berthelot as follows: "There takes place, without doubt, in the reaction of water upon carbide, local elevations of temperature which are sufficient to carry points of the mass to incandescence; the ignition of these points is sufficient to cause an explosion to propagate through the mass of the gas when compressed." This refers to generators which compress the gas by confining it during generation. An accident of this kind occurred at Baviere, where a workman suddenly let a quantity of water upon a large charge of carbide, then raised the gas holder, letting in some air; generation was taking place and the temperature had evidently reached 896° Fahr., for the gas exploded from no outside cause, and amputated both arms of the workman. A number of similar instances have occurred. After-generation, when confined by closing valves, may also explode the generating chamber, by the excess of pressure created when there is sufficient gas and water present, pressure having no effect upon the ability of carbide to give off gas. We may mention here an experiment which is of some interest: It was endeavoured to make a table lamp on the principle of dipping carbide into water; the carbide was packed into a cylindrical recipient quite solidly, and was lowered gradually into the water; after a short time the gas was observed to have an ether odour, and on examination the carbide was found red hot, but as there was no air present there was no ignition nor explosion. High temperatures convert acetylene into its polymers, such as benzine, ethers, etc.

Non-compressed acetylene indicates a pressure below two atmospheres in France or 1·5 atmospheres in England. Above these limits it is dangerous, for it ignites at 896° Fahr., while other inflammable gases require 1,112° Fahr. This limit lowers as the pressure increases, and thus it is that acetylene has been ignited by the heat of a soldering iron. Würzler and Beauregard found that the heat produced by an alcohol lamp was sufficient to provoke decomposition of this gas.

According to Berthelot and Vieille, the velocity of explosion is from 13 to 26 feet per second with mixtures of air containing 5 to 15 per cent. of gas. This velocity increases with the pressure under constant volume; the effect of this velocity is to make the explosions very destructive in breaking rather than throwing about. Bunte has made some comparisons between the velocity of the explosive waves for various air mixtures with various gases, and as



Comparative explosibility of some Hydrocarbon Gases.

it is to the point we present it, reduced from the metric to the English system of units:

The quicker combustion takes place, the more violent the explosion. It will be seen that not only does acetylene have a wide range of explosive mixtures, but that it also is intensely energetic and attains a higher velocity even than hydrogen, and that is why an acetylene Bunsen gives higher temperatures than an oxy-hydrogen flame.

The distinguished specialist, Roussy de Sales, describes an experience with the use of acetylene in a four horse-power gas motor where the head of the motor was blown out. The firm of Hille, in Dresden, build acetylene motors. Should the exit orifice of a liquefied or compressed gas cylinder ignite after mixing the gas with air, two explosions, differing in their nature may follow, the one of the air and gas mixture outside, which may generate 297 calories per cubic foot of acetylene burned; the other, the decomposition of the confined pure gas, which gives up its heat of formation, 818 calories per pound, or 452 calories per cubic foot; in other words, two explosions may result, the one caused by a leak forming an air-gas explosive mixture outside, which ignites the leak, raises the temperature of the receiver to the decomposing point of the contained acetylene. Berthelot insists upon the importance of avoiding the frictional heat caused by gas under pressure issuing from their orifices, of static electric sparks, and the spark caused by a substance striking steel.

A cubic foot of acetone under ten atmospheres pressure dissolves 22 pounds or 300 cubic feet of acetylene, sufficient to supply the same burner during twelve hours. When P is expressed in kilogrammes, the number of grammes of acetylene dissolved by the acetone will be expressed, according to Berthelot, by 35 P. According to F. Dommer, under twelve atmospheres acetone dissolves two hundred times its first volume of acetylene gas, a quantity sufficient to feed the previously mentioned burner for eight hours. A cubic foot of carbide, we have seen, will produce enough gas to feed the burner for twenty-four hours.—*Scientific American.*

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A LIGHT OF 3,000,000 CANDLE-POWER.—At Cape Grisnez a lighthouse is to be erected and fitted with electric light, giving 3,000,000 c.p. This, it is estimated, can be seen at a distance of 48 miles in clear weather and 16 miles in foggy weather.

Lantern Improvement.

By GEORGE KILBURN.

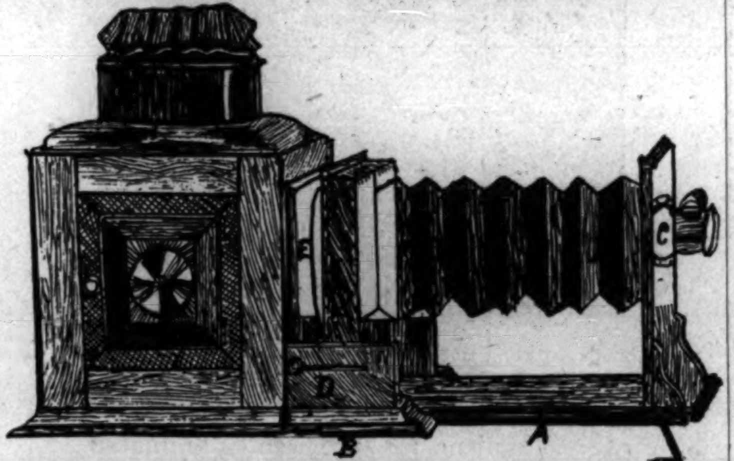
I HAVE often wondered why makers of optical lanterns still continue to make a greater part of these instruments with heavy tubing on the fronts, when a much better, as well as lighter front can be easily made and fitted without increasing the cost very much. The first to come to my notice, like the one I am about to describe, was one altered by a president of the Dewsbury Photographic Society.

Several firms now, however, make lanterns on similar lines, but those possessing lanterns fitted with brass and other metal fronts can with a little trouble and a trifling outlay easily alter them after the style shown in the illustration. The chief article required will be a camera bellows. To many these will prove a serious obstacle to make them themselves. This difficulty can be overcome by purchasing the bellows made ready from some photographic apparatus manufacturer or dealer. Cloth bellows will do, and cost from 2s. to 3s. ¼-plate size, and will be **found most suitable** as regards size for lantern purposes. If leather bellows are preferred these will cost about 1s. or 1s. 6d. more than cloth.

First make a baseboard of the same width as the lantern body (if it does not already possess one which projects some 4 or 5 inches in front) like that shown in drawing. Next cut two narrow pieces about ¾ inch wide and about 5 inches long. Take out a ¼ inch rebate to allow of the extending part moving along the inside of these pieces when fastened on to front part of baseboard at B. Having fitted on these runners, cut out of ¼ or ⅜ inch board a piece 9 or 10 inches long, and as wide as the inside of runners. If made from ¼ inch it will just slide inside the runners, but if cut from the thicker board it will require a little trimmed off the edges to make it slide in the ¼ inch grooves, see A and B.

Now make a piece same as C, and cut out a circular opening for the lens flange, and fix a couple of struts on the bottom part, and fasten on to baseboard as shown. Next cut a similar piece for opposite end with a square opening about 4 inches wide. This piece comes flush against the lantern slide. Cut four pieces an inch in width and ¼ inch thick, and fasten these around the piece with the square opening, which will then form a box which will be a receptacle for the bellows when closed up. Two more pieces are required similar to those marked D. Cut a slot in these to allow of thumb-screws for clamping to front of lantern after inserting slide carrier in position.

Having got all the parts made as described, next fasten on two brass springs as at E. Printing frame springs will answer if bent and cut as shown. Fasten at the bottom part and allow them to curve toward the carrier. Next fix the parts D on to the runners B, and place the box part in position, and mark places for inserting bushes for thumb-screws at each side. In making the pieces D they must be made just high enough for the lantern carrier to rest upon, and a narrow piece fixed across under the carrier as a support for same. Having fixed the carrier parts, fasten on the bellows at both ends. Then fix lens flange and everything will be completed, excepting that a slot must be cut as shown in baseboard A to allow of screw for clamping to front baseboard. After all the parts are finished they will look nicer after receiving a good polishing.



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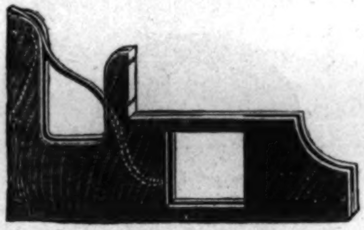
NEW APPARATUS.

SHARP-SHOOTER CARRIER.

One of the latest of lantern carriers brought out by Mr. Tylar, of Birmingham, is termed the Sharp-shooter. When a slide is to be changed on the screen, that which is at the end of the carrier is simply lifted out, when the one which was being shown is pushed into its place, its position in turn being occupied by one which had previously been placed into the upright end of the carrier. It will be seen in the illustration that this upright end is provided with a spring lever, which, during the time that three slides are in the carrier, is on tension; but just as soon as the end slide is removed, the new slide is thus quickly pushed into the line of field and at once centered. Of course, for each slide taken out a new one has to be fed into the upright.



BINDER CUTTER.

The same firm have devised a double wheel slide binder cutter, after the style shown. It is merely necessary to run this over a piece of paper, when both sides of the binding strip are cut simultaneously, thus ensuring them of the same width throughout.

ELECTRIC DARK-ROOM LAMP.

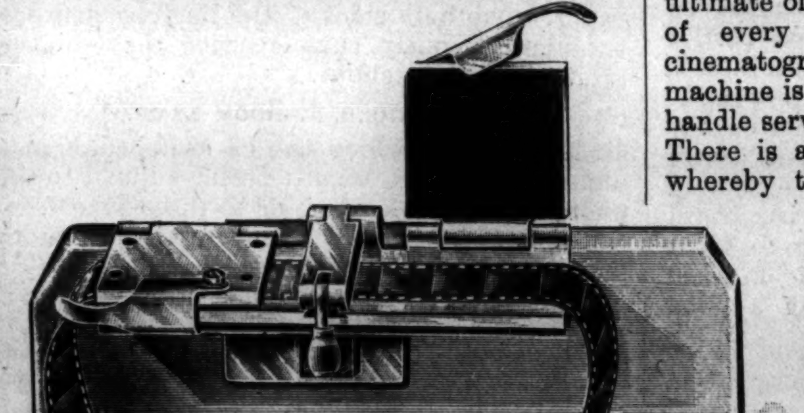
To have a lamp which can be switched on at a moment's notice is a most useful adjunct to the photographic dark-room, or to those who from time to time want to make a few lantern slides. To this end Mr. F. W. Hudlass, of Southport, has placed upon the market a very neat and effective lamp, after the style shown in illustration. The light is switched on by a turn of the milled head at side. The woodwork of this lamp is of mahogany, french polished, and the accumulator, which is 4 volts, gives a continuous light for several hours. With each lamp full directions are sent for recharging. This useful lamp measures 6 by 4 by 2 inches, and can be used as a lecturer's lamp by opening the front glass containing the ruby medium.

PNEUMATIC DISSOLVER.

A few months ago we described the now well-known pneumatic carrier made by Mr. Hudlass. This dissolver consisted of a peculiar form of carrier, attached to which was a shutter for fitting on the lens. This shutter is now supplied either with or without the special carrier, so that it can be used in conjunction with any carrier, the pneumatic part in this instance operating the shutter only.

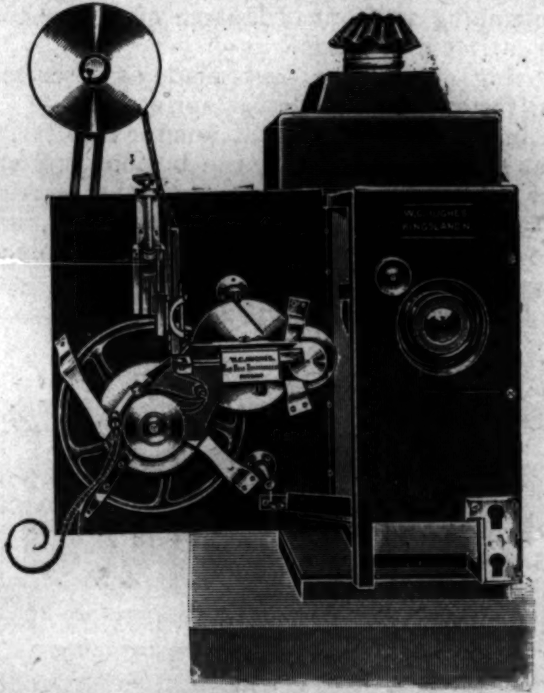
CINEMATOGRAPHIC FILM MENDER.

The exact mending of films is rendered very simple when the new machine for the purpose, introduced by Mr. W. C. Hughes, of Kingsland, N., is used. The broken film is first cut straight and both ends scraped when they are placed on the bed of the mender, care being of course taken that the spocket holes of the film are the correct distance apart. A little cement is applied with a brush, and the clamp shown in the middle of the illustration screwed down. The two side clamps are then closed and the cement allowed to dry for a short time.



MOTOR-PICTOROSCOPE.

For some time past we have been aware that Mr. W. C. Hughes has been designing a new form of mechanism for projecting animated pictures—a machine which he claims to be the ultimate of perfection, as it is the embodiment of every improvement introduced in the cinematograph machines. The gearing in this machine is very high and one revolution of the handle serves to bring into position 15 pictures. There is also an ingenious method employed whereby the great impetus acquired and the perfect balancing of the parts imparts a perfectly smooth action which is practically noiseless and gives no strain upon the film, the spools containing these being fitted with ball bearings. For certain films Mr. Hughes recommends the use of a shutter and this can be switched on or off, even while the machine is running. Scratching of the film is obviated by the particular form of film cage used, which only clamps the film at the edges yet ensuring its remaining perfectly flat at all times. The whole of the cinematographic mechanism is attached to a hinged door, and the very act of opening this causes a carrier to be brought into position which is used either for the announcement of titles or the projection of art pictures. Altogether the whole mechanism is of the finest possible workmanship, and Mr. Hughes is justly very proud of it.

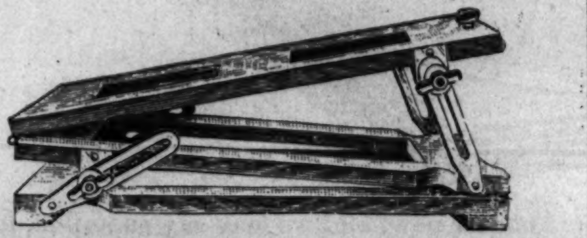


THE COOKE CASKET.

The Cooke lens has lately been issued by Messrs. Taylor, Taylor & Hobson in a casket containing two focal lengths. The casket, which is covered in morocco and lined with silk, contains one 7.5 inch Cooke lens *f* 6.5 and one 10.5 inch rapid view lens *f* 11 with iris diaphragms and patent flange fittings, and is destined to supply the combination with a high-class universal anastigmat of one (or more) single lens of longer focus for landscape or other work. The total weight is 15 ozs. and the outside measurements are 5⅝ by 2⅜ by 2¼ inches.

CANTING LANTERN STAND.

Messrs. Riley Bros. have amongst their vast stock of lantern apparatus a very nice and substantial form of tilting stand for use on a table. By means of this stand, which will be at once understood from the sketch, a bi-unial or other lantern can be easily adjusted without the slightest fear of overturning.



SLIDE BINDERS, ETC.

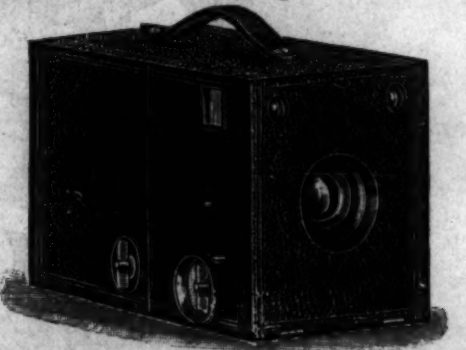
Under the name of Wormwald specialities, Messrs. Wood Bros., of Liverpool, are supplying masks and binders for lantern slides, the edges of which are particularly clearly cut. This firm also make a special feature of supplying gummed numbers, white spots for slides, diagram plates, and other lantern requisites.

DAYLIGHT ROLL HOLDERS.

In addition to the ¼-plate and 5 by 4 holders, described and illustrated in our issue for March last, the Eastman Photographic Materials Company are now making them on the same style for ½-plate and 7 by 5.

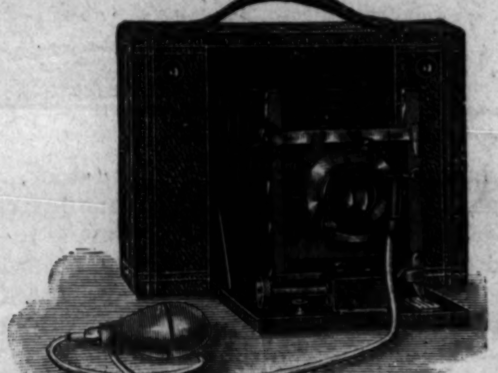
THE SPECIAL BULL'S-EYE CAMERA,

for films only, is fitted with a R.R. lens for 5 by 4 pictures, also with triple action shutter. Iris stops are fitted to this lens For focusing a finely adjusted scale is supplied on the apparatus. As will be seen in the diagram there are two finders, and the camera being on the cartridge system can of course be loaded in daylight.



NO. 5 CARTRIDGE KODAK.

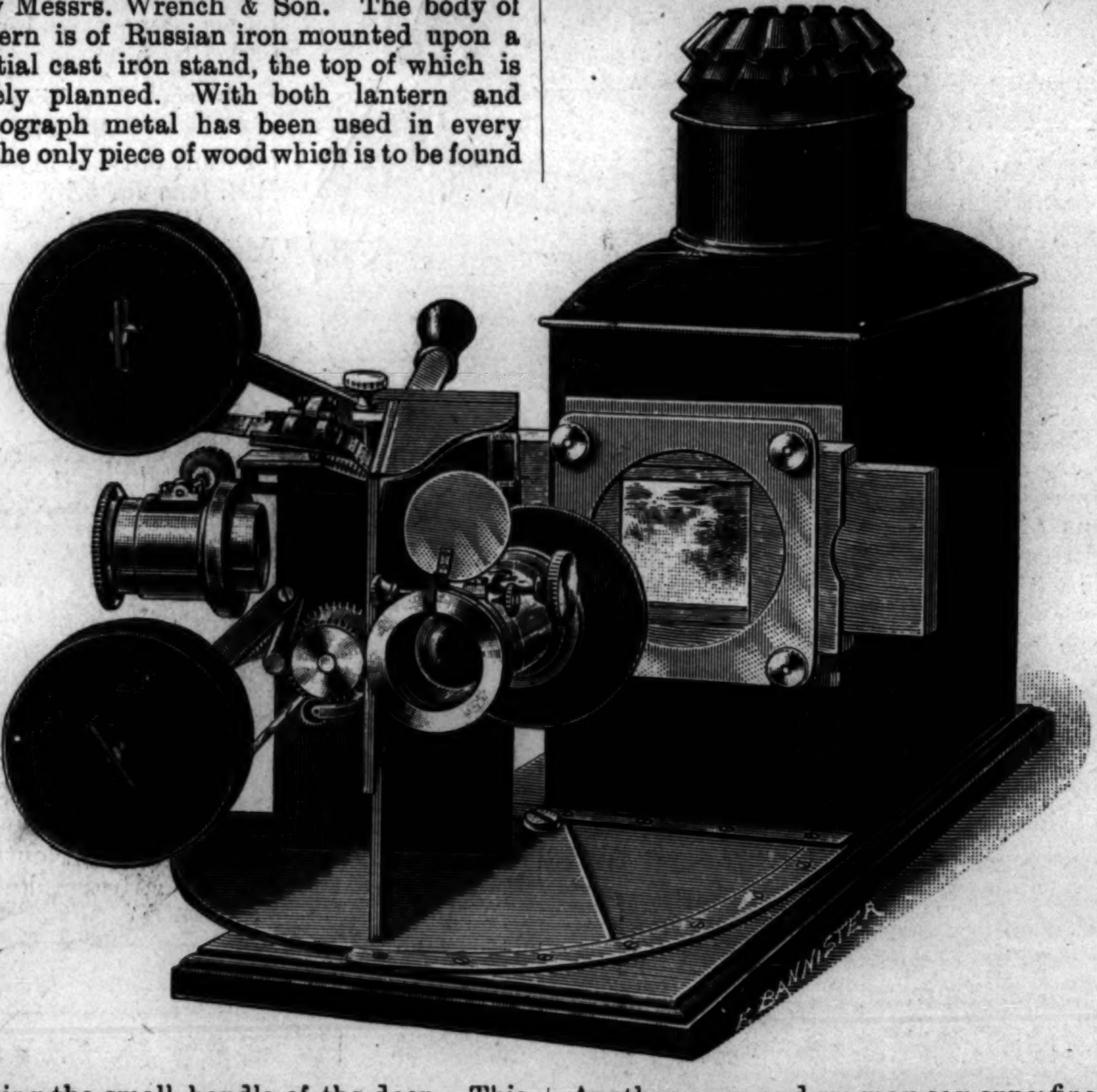
One of the latest cameras brought out by this company is the No. 5 cartridge kodak for rectangular pictures 7 by 5, capable of holding sufficient film for 12 exposures. This camera opens out after the style shown in the



illustration, and the size, when folded, is 3¼ by 8½ by 10⅛ inches, the total weight being under 4 lbs. The lens, which is a high-class one of 8 inch focus, is provided with all the latest attachments. In connection with this camera plate-holders can be supplied, if necessary, to take 7 by 5 or ½-plates.

WRENCH'S IMPROVED CINEMATOGRAPHS.

A greatly improved pattern of cinematograph, termed No. 100B, has been placed before the trade by Messrs. Wrench & Son. The body of the lantern is of Russian iron mounted upon a substantial cast iron stand, the top of which is accurately planned. With both lantern and cinematograph metal has been used in every fitting, the only piece of wood which is to be found on it being the small handle of the door. This cinematograph, of which we give an illustration, is so pivoted on its base that it is made to swing round on a brass quadrant, so that an ordinary projection lens with which it is fitted can readily be brought into use for either the projection of title or ordinary slides. The workmanship throughout is simply beautiful and the fittings absolutely accurate. The alum trough is so fitted to the cinematograph that it is swung out of the heat rays simultaneously with the cinematographic portion. The spools for the film are of 4⅞ diameter, thus affording ample accommodation for about 200 feet of film. The projection lens for the film pictures is also fitted on a rough adjustment slide, thus facilitating the employment of lenses of varied foci. The action of the entire instrument is very certain, accurate, and smooth, and the film is automatically wound up on the lower spool immediately after passing the condenser.



Another new, and we may say superfine, instrument termed "One turn one picture" is also being made. This instrument has a double feed spocket which permits of any length of film being used without the slightest strain upon it. With this geared upper spocket an ingenious reversing arrangement is fitted, which instantly comes into play when the driving handle is turned in the opposite direction, when the film passes upwards in front of the condenser so that reversed action of the film can be shown without the use of a reversing prism. This instrument is mounted with the quadrant much in the same manner as shown in the illustration above. The shutter is placed immediately in front of the lens in the narrowest part of the rays, which permits of a much shorter cut-off than is usually obtained. For taking cinematographic negatives this firm has perfected a camera upon which one would think it was impossible to suggest any improvements. It is made with spool boxes of various sizes to hold from 100 to 2,000 feet of film. There is a special form of finder which enables the operator to adjust the exact focus of the object being taken on the first portion of the film itself. Continuous spocket wheels are only employed as feeders of the film, which is moved intermittently by a very ingenious device termed "One turn one picture." This particular instrument is the style used at the recent coronation festivities at Amsterdam.

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PATENT INTELLIGENCE.

The following List, relating to current Patent Applications, is compiled expressly for the "Optical Magic Lantern Journal" by W. P. Thompson & Co., Patent Agents, of 322, High Holborn, London, W.C., to whom all enquiries for further information should be addressed.

No. RECENT PATENT APPLICATIONS.

17531. 15th August, 1898. Frederick William Barratt. An improvement in acetylene gas generators.

17805. 18th August, 1898. William Charles Hughes. Improvements in cinematographs and like instruments for the protection of kinetoscopic pictures.

17831. 18th August, 1898. John Alfred Prestwich. Improvements in apparatus for animated photography.

17997. 22nd August, 1898. Charles Albert Miller and Frederick John Miller. Improvements in acetylene gas lamps for various purposes.

18135. 23rd August, 1898. Frank McMillan and Alvah Curtis Roebuck. Complete. Improvements in kinetographic apparatus.

18346. 26th August, 1898. Herbert Charles Newton and Frederic Eugene Ives. Complete. Improvements in lanterns for scientific purposes.

18499. 29th August, 1898. Herbert Dickinson and Andrew Gilligan Macculloch. Improvements in mechanism for displaying optical illusory books.

18543. 30th August, 1898. John Bilbie and Henri Drivet. Complete. Improvements in acetylene generators or lamps.

18613. 31st August, 1898. Arthur Samuel Newman and Newman and Guardia. New or improved apparatus for feeding or moving forward intermittently, definite lengths of paper textile or other fabric, photographic film or other material, in sheet or rolled up form.

18775. 2nd September, 1898. James Nisbet and Joseph McKinlay. Combination stereoscopic cinematographs and improved methods and means of working and making stereo cinematographic pictures on films, and for exhibiting same by means of said combination stereoscopic cinematographs.

18875. 3rd September, 1898. Walter White. Improvements in apparatus for producing and exhibiting colour photographs.

19[illegible]06. 7th September, 1898. Gotthard Hansen and Aasmund Kraefting. A new or improved portable generator for acetylene gas.

19220. 9th September, 1898. Robert Atchison. An improved machine for taking and projecting chromo-photographs.

19282. 10th September, 1898. George Barlow Cliff. The "Combine," a lantern for enlarging, reducing, and projection in all kinds of photographic processes.

SPECIFICATIONS PUBLISHED.

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

19319 of 1897. Barnard. Apparatus for generating acetylene or other gases.

21372 of 1897. Chardin. Acetylene gas apparatus.

23495 of 1897. Hopkins. Automatic slide carrier for optical lanterns.

24707 of 1897. Guy. Acetylene gas apparatus.

12160 of 1898. Woolfe. Apparatus for receiving coin and displaying stereoscopic or other pictures or effects in exchange.

15299 of 1898. Hill. Graphoscope for obtaining stereoscopic effects.

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Editorial Table.

RILEY BROTHERS' CATALOGUE.—The 1898-9 catalogue issued by this firm is a good one, and contains many particulars of the special forms of high-class jets and lantern apparatus dealt in. A special feature in this business is the hiring out of lanterns and slides, an excellent selection of which is to be found in their circulating library list.

JOSEPH LEVI AND COMPANY'S new slide list contains particulars of the latest sets, both life models and otherwise, issued to the public for this season. This wholesale firm are the sole agents for the celebrated Ferrier's lantern slides, which possess great delicacy of detail.

LUMIERE'S FILMS.—The agents for these films are Messrs. Fuerst Brothers, and in the latest lists, just to hand, many new films are to be found. These contain records of some of the latest events of interest, besides many pictures of a humorous character.

WILLIAM TYLAR'S latest catalogue of photographic and lantern apparatus is quite a new departure in price lists, for it contains numerous illustrations, printed in colour, of the apparatus which he manufactures. The numerous photographic and lantern adjuncts made by this Birmingham firm are well known throughout the world.

Correspondence.

STEREOSCOPIC PROJECTION ON A LANTERN SCREEN.

To Mr. J. Hay Taylor, Editor.

DEAR SIR,—Mr. F. A. Howard, in his letter published in your issue for September, submits a suggestion for the above and invites criticism. If the presence of light explains the theory or principles of sight, Mr. Howard's explanation of the "Principles of stereoscopic relief" would not be quite so bad as it is. Light is only the initial cause of our visual impressions, and two properly prepared pictures properly presented to the eyes is only the initial cause for seeing stereoscopic.

Mr. Howard is quite right about the dissimilarity of the two pictures when viewed by each eye separately, also in his illustration of natural objects viewed by each eye separately. But he forgets that at this particular time, when only one eye is used, there is no stereoscopic relief. It is only when two eyes are used with the slightly different picture on each retina that we see stereoscopic.

Stereoscopic projection from a single picture is not possible for reasons stated. Then there must be two dissimilar pictures, and these must be presented to the two eyes under proper conditions, as in nature, and herein lies the difficulty.

W. I. CHADWICK.

26, King Street, Manchester.

To Mr. J. Hay Taylor, Editor.

DEAR SIR,—No true stereoscopic effect could possibly be produced in the way indicated by your correspondent, Mr. F. A. Howard, who seems to think that two succeeding pictures taken on a cinematographic film, from a moving steamboat, would furnish a pair of views which, when blended together in the scope or by other means, would produce stereoscopic relief.

There is but very slight difference in two succeeding pictures on a film of this kind, and I should say (roughly speaking) that it would be only every twelfth picture that would be taken from the point at a sufficient separation, and thus foreground objects such as yachts, waves, etc., would have had time to alter their position, which would be fatal to the result. It must ever be remembered that it is absolutely necessary that the two views composing a stereoscopic slide, must be taken at the same moment, unless of course the subject is of still life. Before readers attempt to produce animated stereoscopic slides for the lantern screen, I should recommend them first to solve the problem of adapting binocular vision to the perception of stereoscopic relief from still life subjects projected on to the screen, and let them find a system of doing this without the use of any intermediate appliances for the eyes of the audience.

Of course, animated stereoscopic views for the stereoscope is practicable and may be done by using a pair of cinematograph films, which have been taken from two points of view equal to the separation of the human eyes, and exhibiting such films side by side in the stereoscope by the use of suitable mechanical means.

THEODORE BROWN.

Portland House, Fisherton, Salisbury.

Notes and Queries.

Eureka.—We have alluded to the explosion in another column, but, as you will see, have mentioned no names.

John D. Cuzner.—(1) Write to Mr. Moss, of the Abingdon Acetylene Gas Company, Birmingham. (2) Three will give more light than two.

J. E. Thornton.—We replied by post.

W. J. G.—(1) You need have no fears about the cylinder of oxygen which you have had standing in the outhouse for several months past; it will not deteriorate by keeping, hydrogen, on the contrary, often does. It might be wise to apply the gauge to the cylinder to ascertain the quantity, for cylinders which have been full have been found to be empty after standing by some months, for the slightest leak at the valve makes a good difference in the contents in the space of some months. (2) The jet is well spoken of by those who have used it.

P. Newland.—Thanks for your communication; it came too late for ANNUAL, but we will alter it slightly and give it a place shortly in JOURNAL.

D. J. H.—We agree that it is somewhat heavy, but it is certainly good value.

P.—We regret we cannot recall particulars, but as you state that you have been a reader of this Journal from the beginning, you will find it mentioned therein some half a dozen years ago.

G. F.—If the adapting shutter or mask will not move sufficiently to render the picture wholely visible on the screen with your cinematograph machine, we can only suggest that you disengage it from the spocket wheel and set it either back or forward a couple of holes, which are at the edges of the film. Had you stated whose apparatus you were using we would have understood your query better.

Lanternist writes:—I intend purchasing a lantern, but I want the very best obtainable; from what firm would you recommend me to purchase it? I want the very best at a moderate price. *Ans.*—The term "lantern" nowadays includes everything from a single to a triple fitted with a cinematographic attachment, hence is somewhat elastic in its meaning. We regret, however, that we can only refer you to the firms whose advertisements will be found in our pages, as we make it a rule not to institute comparisons between the relative qualities of various makers.

J. Haslock.—(1) We do not give the addresses of contributors, but if you like to send an envelope with stamp enclosed in another to us we will fill in the address and post it, and if the party then likes to reply, all well and good. (2) We know of no firm making articles such as you describe. They were discontinued some years ago, but it is just possible that you may meet with some second-hand through the medium of our advertising columns.

W. K. Lightfoot (Odessa).—We know nothing about the party whose advertisement you refer to.

Messrs. Rendle, Scrimgeour, Dunmore, Perkins.—We regret that in this issue space would not permit of your valuable communications being inserted; they will, however, appear in next.